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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/675,422	09/29/2000	Akira Yamaguchi	09792909-0431	3868

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EXAMINER

TSANG FOSTER, SUSY N

ART UNIT

PAPER NUMBER

1745

~~DATE MAILED: 10/02/2002~~

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

09/675,422

Applicant(s)

YAMAGUCHI ET AL.

Examiner

Susy N Tsang-Foster

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1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 September 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other: _____

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DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: In Figure 1, reference sign 20 does not appear to be mentioned in the specification. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to because in Figures 2-4, it is unclear what the circles and triangles refer to. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

4. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

In claim 13, the limitation “a nonaqueous electrolyte secondary battery comprising an electrode composite and a nucleic acids, the electrode composite comprising a positive electrode” is not in the specification.

In claim 18, the limitation “the carbon flakes have an average diameter of 0.5 to 50 μm and an average length of 0.01 to 1 μm ” is not in the specification. Instead, page 9 of the specification mentions “the carbon flakes have an average diameter of 0.5 to 50 μm and an average thickness of 0.01 to 1 μm ”.

5. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Numbering of Claims

6. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered claim 26 (second occurrence) been renumbered as claim 27.

Claim Objections

7. Claim 22 is objected to because of the following informalities: In claim 22, the Markush group should be written as “selected from the group consisting of polyvinylidene fluoride...” instead of “selected from polyvinylidene fluoride...”. Appropriate correction is required.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 7-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 7 and 20 are indefinite because it is unclear what x and y are in the formula.

In claim 13, the limitation “an electrode composite and a nucleic acids, the electrode composite comprising a positive electrode” is indefinite because it is unclear what a nucleic acids is and it is unclear how the electrode composite comprises a positive electrode.

In claim 18, the limitation “the carbon flakes have an average diameter of 0.5 to 50 μm and an average length of 0.01 to 1 μm ” is indefinite because it is unclear what the difference is between the average diameter of the flakes and the average length of the flakes. For the purposes of prosecution of the instant claims, this limitation is interpreted as “the carbon flakes have an average diameter of 0.5 to 50 μm and an average thickness of 0.01 to 1 μm ” in light of the specification on page 9.

Claims depending from claims rejected under 35 U.S.C. 112, second paragraph are also rejected for the same.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

11. Claims 1, 2, 4-9, 11-14, 16, 17, 19-21, 24, 26, and 27 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by JP 08-287952 A.

See abstract; paragraph 13; paragraph 35 (table 2); paragraph 41; paragraph 43 (table 3); paragraph 49; paragraph 51; paragraph 52 of machine translation of reference.

12. Claims 1, 6, 7, and 13 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Inoue et al. (6,090,506).

See col. 9, lines 48-55; col. 10, lines 23-55; col. 12, lines 12-35 and Figure 1 of the reference.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 1-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 0871233 A1 in view of JP 09-027344 A.

EP 0871233 A1 discloses a nonaqueous electrolyte secondary battery comprising a positive electrode comprising a positive-electrode active material capable of intercalating/deintercalating lithium; a negative electrode comprising a negative electrode active material capable of intercalating/deintercalating lithium and a nonaqueous electrolyte solution wherein the negative electrode further comprises carbon flakes (trademark name KS-15 from Lonza Ltd, see for example, page 21, line 15-20) and carbon granules (see page 23, lines 15-23, lines 30-35, lines 39-50, lines 55-58; page 24, lines 1). The positive electrode active material can be a lithium transition metal oxide given by the general expression LiMO_2 where M is at least one element selected from the group consisting of Co, Ni, Mn, Fe, Al, V and Ti (page 23, lines 47-50) and the negative electrode may be a lithium metal oxide or graphite (page 5, lines 17-20; page 9, lines 15-25; page 24, line 1). The electrolyte solution in the battery may be a mixture of ethylene carbonate and dimethyl carbonate comprising LiPF_6 as the electrolyte salt (page 8, lines

5-26; page 9, lines 50-55). Generally, the binder PVDF is used in the electrode of a lithium battery (page 9, lines 15-25).

EP 0871233 A1 does not disclose that the negative electrode comprises carbon flakes and carbon fibers.

JP 09-027344 A teaches adding 3 to 16 wt% of carbon flakes and carbon fibers to the positive electrode of a lithium battery with the mixing ratio of carbon flakes to carbon fibers of 85:15 to 25:75 which would be a ratio by weight of .25 to 5.66 carbon fibers to carbon flakes (see abstract). Calculations would indicate that this would be approximately .75 wt% of carbon flakes to 13.6wt% carbon flakes and .45 wt% carbon fiber to 12 weight percent carbon fiber in the positive electrode. JP 09-027344 A also teaches carbon fibers with the trademark name VCGF by Showa Denko KK and carbon flakes with the trademark name KS-15 are used in the positive electrode (see paragraph 121 of machine translation).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the carbon granules in EP 0871233 A1 with the carbon fibers of JP 09-027344 because they both serve the same purpose of maintaining the structural integrity of the electrode during the charge/discharge cycle as taught by JP 09-027344 in paragraph 19 (see machine translation) and by EP 0871233 A1 on page 5, lines 4-8. Since the carbon fibers used in JP 09-027344 has the same trademark name as that used by applicants, and the carbon flakes used in EP 0871233 A1 has the same trademark name as that used by applicants, the carbon fibers of JP 09-027344 and the carbon flakes of EP 0871233 A1 are expected to have the properties (such as diameter, length, and thickness) cited in the claims.

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It would have also been obvious to one of ordinary skill in the art at the time the invention was made to use 3 to 16 wt% of carbon flakes and carbon fibers with the mixing ratio of carbon flakes to carbon fibers of 85:15 to 25:75 in the negative electrode of EP 0871233 A1 because this proportion would give sufficient conductivity and structural strength to the electrode as taught by JP 09-027344 in paragraph 51 (see machine translation). Furthermore, EP 0871233 A1 disclose that the total amount of conductive agent (carbon flakes and carbon granules) in the negative electrode is 2 to 15% by weight (page 5, lines 1-3) and that the preferred mixing ratio between carbon flakes and granulated carbon is 90:10 to 20:80, which are nearly identical to the range of 3 to 16 wt % of the total conductive agent (carbon flakes and carbon fiber) and weight ratio of 85:15 to 25:75 (carbon flakes to carbon fibers) taught in JP 09-027344.

15. Claims 10, 22, 23, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 08-287952 A in view of EP 0871233 A1.

JP 08-287952 A discloses all the limitations of claims 10, 22, 23, and 25 (see abstract; paragraph 13; paragraph 35 (table 2); paragraph 41; paragraph 43 (table 3); paragraph 49; paragraph 51; paragraph 52 of machine translation of reference) except that the electrolyte solution is a mixture of ethylene carbonate and dimethyl carbonate and that the binder in the electrodes is polyvinylidene fluoride.

EP 0871233 A1 teaches electrolyte solution is a mixture of ethylene carbonate and dimethyl carbonate and that the binder in the electrodes is polyvinylidene fluoride (PVDF) (page 9, lines 20-25 and lines 50-52).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a mixture of ethylene carbonate and dimethyl carbonate as the electrolyte solution in the nonaqueous battery of JP 08-287952 A because the mixture would be compatible with the graphite electrode active material in the negative electrode as taught by EP 0871233 A1 at page 8, lines 10-16).

It would have also been obvious to one of ordinary skill in the art to use PVDF as the binder in the electrodes of the nonaqueous battery of JP 08-287952 A because it is well known that PVDF is compatible with the electrolytic environment in the nonaqueous battery.

Conclusion

16. Any inquiry concerning this communication or earlier communications should be directed to examiner Susy Tsang-Foster, Ph.D. whose telephone number is (703) 305-0588. The examiner can normally be reached on Monday through Friday from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gabrielle Brouillette, Ph.D. can be reached at (703) 308-0756. The phone number for the organization where this application or proceeding is assigned is (703) 305-5900.

The fax phone numbers for the organization where this application or proceeding is assigned is (703) 872-9310 for regular communications and (703) 872-9311 for After-Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

st/17 December 2001

A handwritten signature in black ink is written over a circular official stamp. The signature appears to be 'S. Tsang-Foster'. The stamp contains the text 'U.S. PATENT & TRADEMARK OFFICE' and the number '1700' is handwritten to the right of the stamp.